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Accessing FMS Functionality: The Impact of Design on Learning

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Summary

In modern commercial and military aircraft, the Flight Management System (FMS) lies at the heart of the functionality of the airplane. The nature of the FMS has also caused great difficulties learning and accessing this functionality. This study examines actual Air Force pilots who were qualified on the newly introduced advanced FMS and shows that the design of the system itself is a primary source of difficulty learning the system.

Twenty representative tasks were selected which the pilots could be expected to accomplish on an actual flight. These tasks were analyzed using the RAFIV stage model (Sherry, Polson, et al. 2002). This analysis demonstrates that a great burden is placed on remembering complex reformulation of the task to function mapping. 65% of the tasks required retaining one access steps in memory to accomplish the task, 20% required two memorized access steps, and 15% required zero memorized access steps. The probability that a participant would make an access error on the tasks was: two memorized access steps - 74%, one memorized access step - 13%, and zero memorized access steps - 6%. Other factors were analyzed as well, including experience with the system and frequency of use. This completed the picture of a system with many memorized steps causing difficulty with the new system, especially when trying to find where to access the correct function.

Introduction

This study examines U.S. Air Force pilots using an advanced FMS, similar in functionality to those in modern commercial aircraft. The system had been recently introduced, providing an opportunity to identify problems associated with learning the new system. The FMS and pilot performance is examined using the RAFIV stage model (Sherry, et al, 2002). The goal of this part of the analysis is to show that specific errors can be predicted from the design characteristics of the system. This study also examines the errors that are made while learning a new FMS for the first time and shows how patterns of error change with increasing experience. From these analyses, recommendations are made to improve both training and future designs.

First, there is no doubt that the current suite of aviation flight management systems provides an impressive array of functionality for managing an aircraft's flight. Advances in technology have been incorporated into these designs allowing precise vertical and lateral navigation as well as accurate time control. This particular system in this study, the C-130 Self Contained Navigational System (SCNS), allows FMS lateral flight path control, access to advanced communication features, internally generated approach guidance, target time control and other sophisticated features. These type of systems have been reported to be difficult to learn and hard to use (Sarter and Woods, 1992; Sherry, et al 2003). The major advances in technology have increased the functionality of the systems, but corresponding advances have not been made with the usability of the systems. Similarly, advancements in training techniques have not been applied to current training programs. (Irvine, Polson, and Irvine, 1994) For example, training manuals still emphasize long and complicated serial lists of memorized actions that can be very brittle and easily forgotten by the novice user. Anderson (1998) and Polson (1999) show more effective methods of training complex actions that involve problem solving strategies and grouping over list memorization.

It comes as no surprise then that learning the glass cockpit for the first time can be extremely difficult. 'What is it doing now' is a phrase familiar to commercial airline pilots new to FMS equipped aircraft. Some may never master the new skills required for operating the computerized flight deck. Others may only grasp a few basic survival tools that allow them to simply function in the perceived complex environment. Even for pilots proficient with the basic features, potential benefits of unused functionality may never be discovered.

In some situations, poor FMS skills can become a potential source difficulty during flight operations, even leading to safety of flight problems. Forgotten steps or steps performed out of sequence can cause distraction and confusion which can lead inadequate attention to flying the airplane, inability to function as an effective crew member, loss of situational awareness, or other critical issues. For example, an FMS programming problem contributed to a loss of situational awareness and hull loss on approach to Cali, Columbia (AA965 Cali Accident Report, 1996). This difficulty learning and using flight management systems is well documented, for review see Billings (1991), Wiener and Nagel (1988).

What is less well documented and understood is why these systems are so cumbersome and hard to learn. Much is known about human memory and learning, great advances have been made in office automation software. This knowledge is very applicable to design and training issues with the FMS. Taking direction from this work, Sherry et al (2002) have pursued an approach to examining tasks using a stage model and then classifying each step as requiring recall or supporting exploration. The model, RAFIV, contains three basic stages: *comprehension* - reformulating the task into FMS functionality; *communication* - accessing the correct feature and entering the information; and *confirmation* - verifying the information is correct. The communication stage looks at three issues for FMS interaction: accessing the correct page, formatting the data correctly, and inserting the data in the correct location. The verify and monitor stage emphasizes looking for feedback in the correct location and manner to catch errors and ensure the system is performing as requested.

Reformulation is the critical step to enable a person to access functionality (Polson, Fennell, Sherry, 2003). Reformulation that directly links the task to the FMS functionality would not require memorization of complex steps or relationships. If the reformulation contains memorized steps then the task will be harder to learn and more likely to be confused or forgotten. Since the reformulation contains the key to accessing the functionality, the errors will be shown in failed or confused access. A successful reformulation will direct the task to the proper FMS functionality. Reformulate and access are inextricably intertwined. A complex memorized reformulation will give the correct access, but if the access label is difficult to remember itself, then the reformulate may be troublesome. For example, to "activate" the flight plan, the pilot must reformulate the task into steps remembering that this is a NAV feature and remembering to push the label called "mode ctrl". The more memorized access steps, the more complex the reformulate.

Insert and *format* would not contain recall steps if the displays simply provided labels and defaults. Without this, memorization of recall *insert* and *format* steps becomes another source of difficulty during training. If the FMS does contain recall *insert* and *format* steps, they may not be problematic for experienced users if the entries are standard, consistent, and performed frequently. However, non-standard and infrequent recall steps may cause difficulty even for experienced users.

Verify Steps are important as a final method for trapping an error before it becomes active. Verify steps that do not direct the users attention to the proper area or are easily ignored - such as "automatically" pushing a verify button without "true" verification - could be troublesome. Proper verification is a disciplined approach to using the FMS. A device with good feedback on the consequences of the action would promote this verification. Conversely, simply pushing a verify button that comes up on every task without a meaningful relationship to that task may be prone to automatic execution without actual verification.

How well have current aircraft flight management systems been designed according to these standards? The data has been clear - a large proportion of tasks within these systems requires complex reformulation and remembering specific information that is not supported by the display. Sherry et al (2003) analyzed the 777 FMS using the RAFIV analysis techniques and discovered that 75% of the tasks required one or more recall steps and of these many were infrequent tasks - further aggravating the situation. This study applies this model to real world data. It examines the FMS itself and looks at the types of errors in relation to the predicted problem areas of the FMS. In addition, background experience data was collected to help understand how this may affect learning the new system.

This study examines a unique data set of pilots learning a new FMS. The FMS was incorporated into an existing airframe, in which the pilots were already qualified. Twenty Lockheed C-130 pilots participated; all were fully qualified on the new system but with different amounts of flight time on the newly equipped aircraft.

Method

Subjects

The subjects were 24 Air Force Reserve C-130 Pilots who volunteered to participate in the study. Two subjects were not included in any statistical analysis due to missing data. Subjects who participated gave informed consent and were assured of confidentiality of identity and personal performance. All participants were fully qualified in the use of the Self-Contained Navigation System. Experience ranged from 550 to 8000 hours flight time in all aircraft types. Age ranged from 25 years to 42 years. The mean age was 33.9 years with a standard deviation of 4.8 years. Only male pilots were available.

Task and Equipment

The equipment was an actual Self-Contained Navigation System used to test components in an avionics shop. This equipment was fully operational and provided the same information as in flight. The setup was identical to, and fully interchangeable with, the equipment on the C-130 aircraft.

To accomplish the required tasks, the pilot pushed keys on a display unit composed of a 5" x 5" CRT above an alphanumeric keypad of similar dimensions (see figure 1). By pushing keys on the keypad, numbers and information could be entered and various software routines could be selected to execute different types of tasks.

The software routines provided different types of information and affected the equipment in different ways. The TUNE routine controlled all radio functions. The TEST routine controlled system configuration and status. The UPDATE routine updated the software in flight. The NAV routine controlled navigation functions. The PLAN routine controlled flight plan functions.

Twenty tasks were selected to represent actual functions required in flight (see appendix i). The tasks were a cross-section of the available tasks on the SCNS that might be required during flight. Half of the tasks involved the TUNE routine since this was a predominant SCNS responsibility of the pilots. Four tasks involved the PLAN routine. Five tasks involved the NAV routine. One task involved the TEST routine. Task presentation was alternated between routines in a mixed manner so no pattern existed for prediction of the following task. Table 1 gives one example of how a successful task was accomplished.

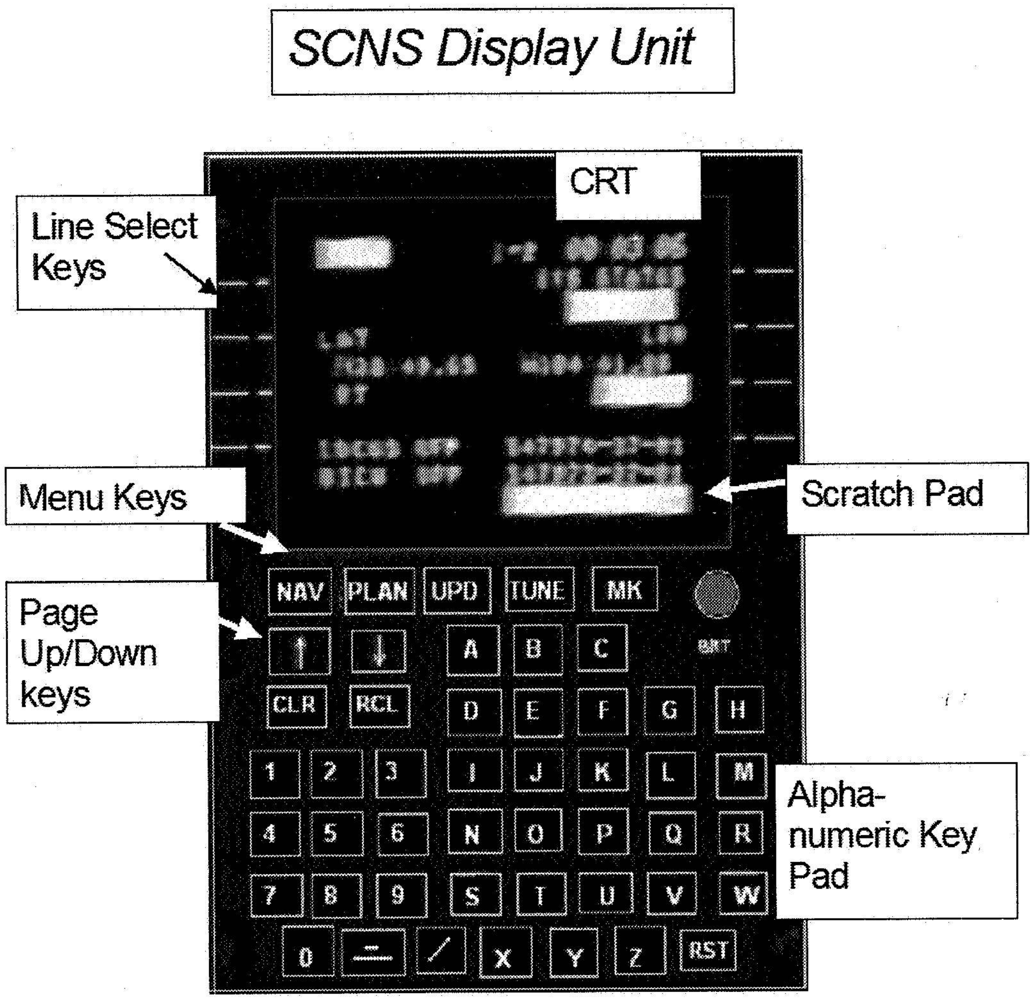

Figure 1. Display unit composed of a 5" x 5" CRT above an alphanumeric keypad of similar dimensions.

Table 1. Example Task and Steps

TASK 7 – Tune TACAN to channel 114

Access	Step 1	Match the task goal – TUNE - to the TUNE key and press TUNE key
	Step 2	Recall that the TACAN must be accessed on Navigation Radio page – page up until finding this page
Format	Step 1	Type 114 into scratch pad
Insert	Step 1	Insert the contents by pushing TAC1 label
Verify	Step 1	Verify that the entry is correct

Table 2.
Task Steps per RAFIV stage, total task number = 20

	Access	Format	Insert	Verify	Total
total steps	46	5	16	20	87
total recall steps	21	3	2	1	27
avg total steps	2.3	1	1	1	4.35
avg recall stps	1.05	0.6	0.125	0.05	1.35

NOTE: not all the tasks had format and insert steps. Averages exclude these tasks.

Procedure

Subjects were asked to fill out an informed consent form and an experience questionnaire upon arrival to the experiment location. The experience questionnaire asked pilots to record flight time, computer experience, age, and types of flight experience. Instructions were given at the start of the session about how to complete the experiment and how to respond to the required tasks. A video camera faced the display to record all button presses and screen output. Twenty discrete tasks were given verbally to each subject. The next task was not presented until the previous task was completed. The subjects were told to do their best to accomplish the tasks without assistance. They were informed that assistance would be provided when they felt they could not proceed further. This enabled all subjects to accomplish all tasks. In the actual airplane, pilots would be able to ask other crew members for assistance or refer to an approved in-flight reference if required.

The experimenter answered questions and provided feedback after all twenty tasks had been accomplished. Practice on any of the tasks followed if desired. The practice focused on any areas in which the pilot may have had an interest or where the pilot felt below his desired performance level. The session lasted approximately thirty minutes.

The videotape was analyzed by frame to record all key presses. The key presses were then analyzed to determine where they deviated from correct procedure. Each deviation was scored as an error from one of twenty-six types. The errors were then later categorized according to the RAFIV stage, assist, efficiency, or timing. Assists were recorded each time the subject requested assistance to accomplish the task.

Results

The tasks were first analyzed by using the RAFIV technique developed by Sherry et al (2002). Each of the twenty tasks were divided into steps and then classified into RAFIV component stages. Each step was then labeled as a memorized step (recall) or a step supporting exploration (recognition). Some tasks required no format or insert stages. Overall, the average steps for a task was 4.35, with an average of 1.35 of these steps requiring memorization. The average steps required to ***access*** these tasks was 2.35, with 1.05 of these requiring memorization. Table 2 shows the steps per task breakdown.

Each stage in the model was scored as either recall or recognition that supported exploration. Reformulate, the process of translating the task into access steps, dominated with the largest percentage of recall steps, and as is shown later, will account for most of the task critical access errors (see figure 2).

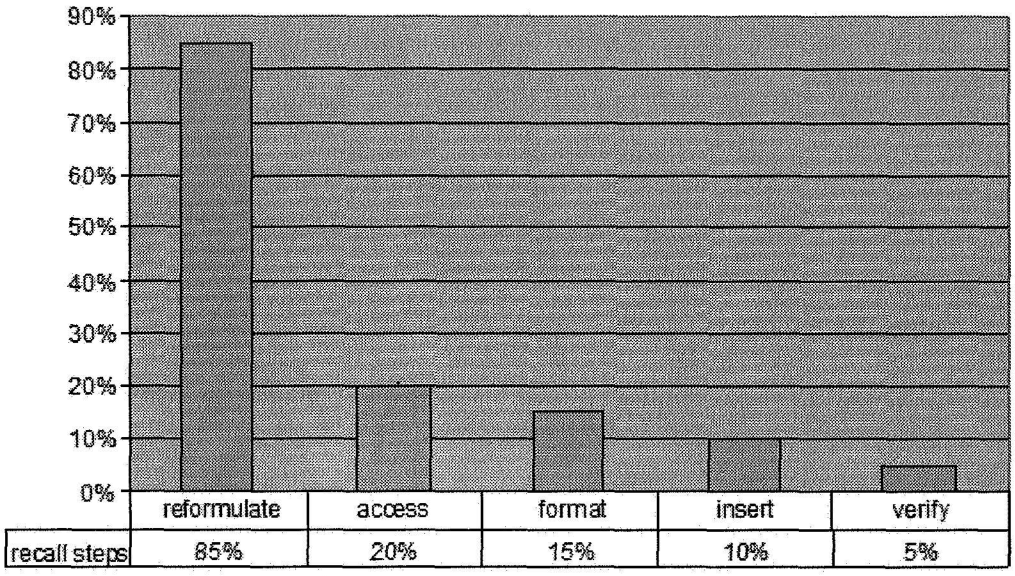

Figure 2. Percentage of tasks containing recall steps.

Percentage of tasks (n=20) containing recall steps by RAFIV stage

Reformulate, n=17 - 85%
Access, n=4 - 20%
format , n=3 - 15%
insert, n=2 - 10%
verify, n=1 - 5%.

Tasks were also given a frequency rating based on mission usage. If a task was estimated to be performed by the pilot more than once in ten missions then it was recorded as frequent. 65% of the tasks were classified as frequent.

Error classification

A total of 467 errors were recorded and sorted into twenty-six specific descriptions of the actual error. See appendix ii for the error descriptions. When the trials were administered, the participants tried as best as possible to complete the task without assistance. The experimenter did not provide clues or assistance until requested. It was possible that the participant could make more than one of the same type of errors for a given task. For example, as the participant tried to accomplish a task, they may have accessed the wrong routine (NAV instead of PLAN) and were unable to find the desired task. They may have then gone to the correct routine but selected the wrong sub-routine or prompt from this menu. In this example, both of these errors were classified as access errors, even though they occurred at different levels within the access stage. Errors were classified into the following RAFIV categories: access, format, insert, and verify or non-RAFIV categories: feedback/timing, efficiency, and assists.

Access errors were indicated by selecting the wrong routine (key) or searching in the wrong routine (215 errors). Since intervention was only provided when requested, it was possible to make more access errors than access steps in a task. We also coded initial accesses errors as the inability to access the correct feature on the first attempt (110 errors). This was useful to more accurately compare tasks.

Format Errors were formatting or typing an invalid entry (29 errors).

Insert Errors were pushing a prompt other than the correct insert prompt (25 errors).

Verify Errors were verifying an incorrect entry (16 errors).

Feedback or Timing Errors were errors caused by a delay in response from the system (46 errors).

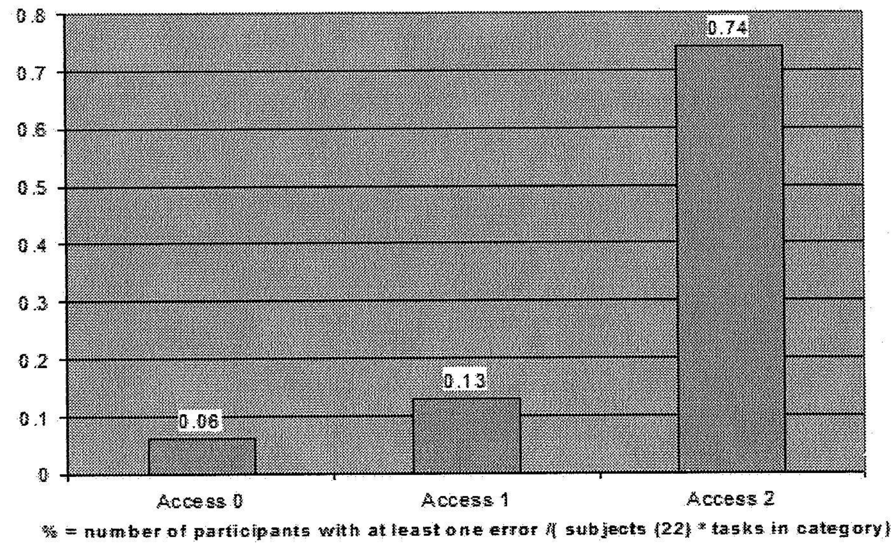

Figure 3. Probability of an access error per task.

Efficiency Errors were errors due to a long or round about method to accomplish a task (13 errors).

Assists were indicated where intervention was required to accomplish the task (123 errors).

Average errors per task and average errors per task step are shown in table 3.

Access and Errors

The strategy for overcoming access problems is to effectively reformulate the task to match the support provided by the system. Failed reformulation will manifest itself directly in an access error. 96% of the access errors occurred on the tasks that contained recall steps in reformulation stage. To examine the effect of reformulation on task accomplishment more closely, we grouped the tasks into three categories, zero memorized steps required for access, one memorized step required for access, and two memorized steps required for access.

65% of the tasks (n=13) required retaining one access steps in memory to accomplish the task, 20% (n=4) required two memorized access steps, and 15% (n=3) required zero memorized access steps. The probability that a participant would make an access error on a task was:

two memorized access steps - .74,
one memorized access step - .13,
and zero memorized access steps -.06.

The tasks with zero memorized access steps (n=3)

8 total access errors were made, all committed on task 3. Of these errors 4 were initial access errors. Three of the subjects made only one initial access error. Task 3 asked the participants to perform a check of the current flight plan. Pressing the plan menu key and selecting the check flight plan prompt accomplished this check. The errors resulted from going to the NAV menu key instead of the PLAN menu key and were most likely due to misapplying the rule "*enroute features are done using the NAV menu key*". Since it was the "Current" flight plan they looked for the solution under the NAV menu instead of PLAN. Even though there were no memorized steps, these participants still made an access error by miss applying a reformulation correct for another task set.

Table 4.
Access Errors per Recall Steps

	0 recall steps	1 recall step	2 recall steps	total
Number of tasks	3	13	4	20
initial access errors	4	37	65	106
total access errors	8	47	160	215
avg. init. access error/ task	0.06	0.13	0.74	0.24
Avg.total access error/task	0.12	0.16	1.82	0.49

These tasks made up 15% of the tasks and accounted for 4% of the access errors. The probability that an access error would be made on one of these tasks was .06.

The tasks with one memorized access step (n=13)

47 total access errors were made. Of these, 37 were initial access errors.

2 tasks had zero access errors even though they required one memorized access step. This was explained by the fact that these two tasks were very frequent and therefore practice or use had overcome the access problems.

These tasks made up 65% of total tasks and accounted for 22% of access errors. The probability of making an access error on one of these tasks was .13.

The tasks with 2 memorized access steps (n=4)

160 total access errors were observed. Of these, 65 were initial access errors. The subjects were allowed to continue to search for the correct feature until assistance was requested and this shows that access remained problematic even after searching for the correct feature extensively. These 4 tasks made up 20% of total tasks and accounted for 74% of access errors. The probability of a pilot making an access error on one of these tasks was .74. The pilots also performed these complex tasks more infrequently than the others due to the nature of the particular flight environment.

Format, Insert, Verify and Errors

Overall, these errors were much less common than access errors, accounting for 14% of the total errors (n= 70). However, the errors primarily occurred on tasks where memory steps were required for the related stage.

93% of the format errors occurred on the tasks that required remembering how to format the entry, as opposed to following a label or mimicking default format entry.

80% of the insert errors occurred on the tasks that did not have good labeling support and required remembering difficult or problematic labels.

81% of the verify errors occurred on tasks that required directing attention to an unexpected error but did not provide direct feedback for that task. Specifically, these errors occurred when a verification prompt was pushed for an incorrect entry but the verification prompt

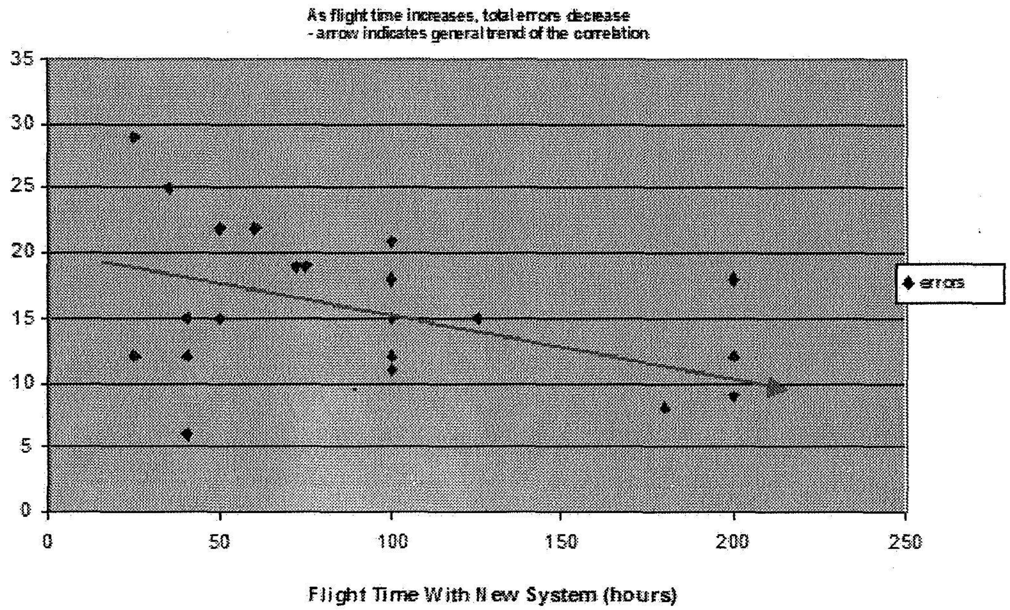

Figure 4. Total errors.

failed to properly direct attention or highlight the error.

The effect of experience on errors

All pilots were relatively new to this system with less than a year of experience. Recent flight time with the new system, the measure of experience with the new system, varied from 25 hours to 200 hours. The average flight time was 96 hours with a standard deviation of 62 hours.

As experience increased with the new system, total errors decreased, r (22) = -.42, p = .025 (see figure 4).. Likewise, relative expertise on the new system was negatively correlated with knowledge type errors or ability to accomplish the task correctly and without assistance, r (22) = -.61, p=.001 (see figure 4).

A few of the test condition tasks required altered data entry and verification from the most commonly used tasks. Errors or slips associated with these type of tasks increased as a function of relative expertise on the new system, r (22) = .44, p = .02 (see figure 5).

An interesting observation was made about various other types of background experience including flight time on the previous system, age, and time spent using personal computers. While age did predict previous flight time and computer experience, it did not predict error rate. Computer experience by itself was a significant predictor for decreased errors, r (22) = -.43, p =.02. This is possibly explained by frequent computer users needing to develop a strategy for accessing computer functions. This strategy may have transferred allowing the pilot to more quickly develop access skills with the aircraft Flight Management Computer. For example, if the pilots correlated the FMC routine access keys to computer program menu prompts, then an already learned search and access strategy could be applied to the new system.

Finally, Errors associated with timing of tasks and display feedback decreased as a function of relative expertise, r (22) = -. 37, p = .04 (see figure 6).

Discussion

This data clearly presents recall steps as a root cause for difficulty learning a new FMS.

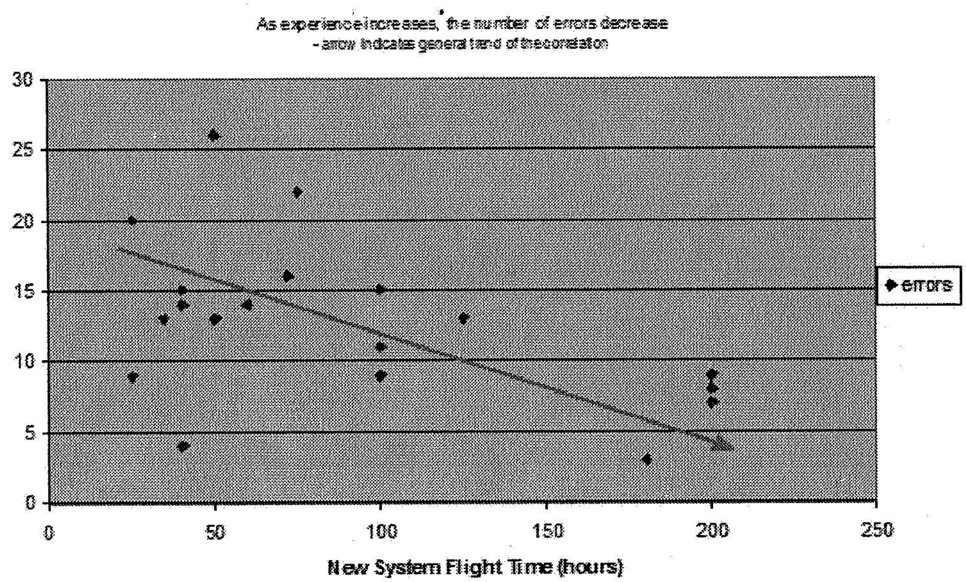

Figure 5. Task Accomplishment Errors.

Recall steps in reformulating or mapping the task to automation function have a devastating effect on task accomplishment. Tasks with 2 memorized access steps had the probability of .74 for committing an access error. This is compared to .13 for one memorized step and .06 for no memorized steps. Clearly the recall steps of this design have very negative impact on access and performance of the task.

68% of the task accomplishment errors occurred on tasks that were both infrequent and contained recall steps in the reformulation stage. This highlights the importance of analyzing frequency in both design and training.

Slips and skill-based errors did not have nearly as large of an impact on performance with this system, accounting for 19% of the total errors. Of these, 13% were associated with timing and feedback and were not affected by recall steps. 6% were associated with data entry slips. These were greatly affected by recall steps in the format stage, accounting for 93% of these errors. Also of note, these slips increased with experience on the new system, countering the trend for other errors to decrease with experience.

Impact on Design

Errors are clearly impacted by design. Based on these findings, a design should support the reformulate and access stage directly with salient labels and easy access. Frequent tasks might not need as much support as infrequent tasks and could be designed for ease and quickness of task execution, while infrequent tasks require direct and clear support. A complete task analysis is important for determining both system functions as well as for task frequency to ensure the task is supported properly.

Consistent feedback from the displays, prompting or examples for format, and good labels for insert all are important for use, but are not as critical to successful use as reformulate and access. Users quickly learn from feedback how to work within the system. Even though problems with data entry are difficult to overcome, these slips did not have a huge impact on performance, only accounting for 6% of the total errors. Still, a design following the RAFIV principles should eliminate these slips altogether.

Impact on Training

Since it is not possible to redesign all current systems, training becomes paramount. Current training programs do not adequately give

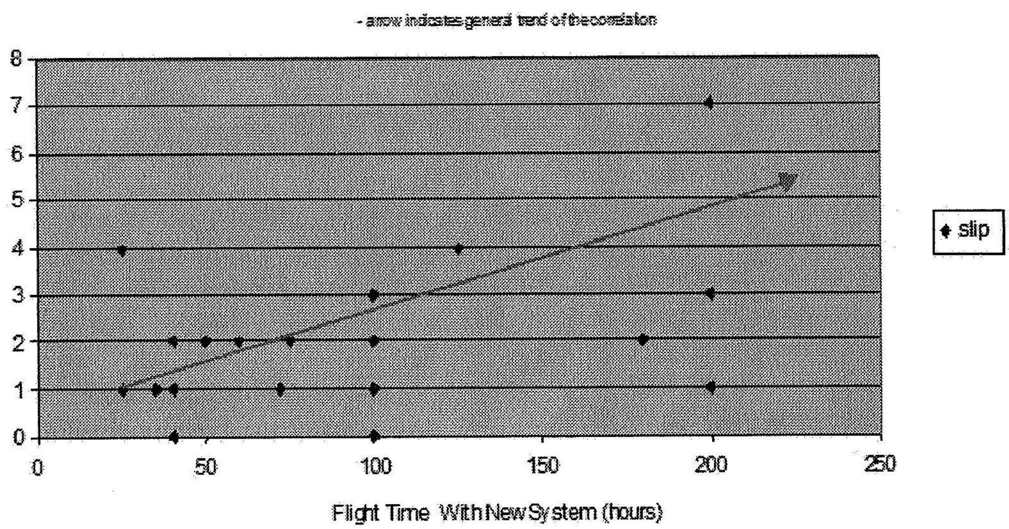

Figure 6. SLIPs associated with data entry / format, or "automatic" verification.

pilots the resources needed to effectively utilize these systems. Manuals still present many of the tasks as a serial list of memorized actions, easily forgotten and brittle causing frustration during training and line operations

Effective training should start with a thorough analysis of the tasks, looking for recall steps and task commonality. A modification of RAFIV (Sherry, et al 2002) for teaching would simplify this model into key problem areas identified by this study, reformulating Access, Entry, and Verification (AEV). First, train access by providing the context, relationships, and devices needed to reformulate the task into FMS functionality. The skill of effective reformulation is the essential *key* to functionality and should be the key to training.. Teaching the reformulation of access steps through mnemonic devices, commonality, and frequency is one approach. The importance of this is that the trainee needs a good understanding of how to access the desired feature long after the training is complete. Where difficult memory steps are identified, powerful memory aides must be implemented. For example, instructors have used the acronym DIFRIPPs as a device to help pilots remember the complex access steps in pre-flighting the A-320 FMS. The next key is proper Entry. This encompasses *format* and *insert* and for most tasks on advanced airplanes can be taught as one step since FMS support is usually adequate. *Format* and *insert* errors in this study were not numerous, even when tasks were improperly supported with recall items. Training *format* and *insert* as a single category would likely reduce the trainee's workload as well provide a simpler tool for the instructor. The last step, Verify, in some ways is as important as access. It is the last step before allowing a mistake to become active. Good verification skills will overcome liabilities of the FMS as well as the human and hopefully prevent catastrophic errors such as the Cali accident. Training where to look during verification and reminders to maintain vigilance when the verification step becomes highly automated are crucial.

Tasks can be grouped by function or by design consistency. Tasks can then be taught by family to reduce the number of memorized steps. Important recall steps can be identified and memory devices emphasized for these steps. For example, when teaching how to perform a course intercept on the Boeing 777, several tasks - such as runway extension, radial interception, airway interception - all can be grouped as a common type of access task to reduce the number of memorized tasks and steps. Enough repetitions must be performed during training to solidify learning, especially for infrequent tasks.

Mission critical infrequent tasks especially need to be repeated or practiced even after training. For example, the need to use VNAV guidance on the Boeing 777 for an engine failure at cruise altitude does not occur frequently in line operations, but proper execution is critical when required. These tasks can be identified with this type of analysis and tools given for practice on the line. Some examples would be web-based trainers, recurrent simulator training, mental "chair flying" exercises, part task trainers, etc. For example, many pilots have made use of "chair flying exercises" to practice complex procedures when no high fidelity device is available. The pilot mentally and verbally practices each step in a procedure as if he were actually in the airplane. This allows the pilot to reinforce complex memorized action. The type of task will drive optimum fidelity for practice. A full motion simulator is essential for actual landing practice, but this motion can be a distraction during FMS training. Realistic feedback with adequate repetition on an FMS trainer is important, but additional repetition with guided "chair-flying" exercises may be an effective way to increase repetitions while studying when no better practice device is available.

The evidence for general computer experience positively affecting performance on this system is further argument for teaching robust skills for managing these systems. The development of these types of skills may allow the user to deal with unusual situations, interruptions or distractions, or slightly altered or modified tasks.

Conclusion

This study shows the effectiveness of the RAFIV analysis as a tool for evaluating areas of usage difficulty within a system. Recall steps by stage very effectively analyze performance deficits associated with the system itself.

Since the Flight Management System lies at the heart of the functionality of the airplane, improvements need to be made in design and training to access the potential benefits this functionality provides. It is the very nature of the current FMS that has caused the great difficulties learning and accessing this functionality. Future designs should take into this into account to reduce training costs as well as increase efficiency of use. Without a proper design, proper training is extremely critical. Without this training, the functionality will continue to be underutilized and training will continue to be perceived as extremely difficult.

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Appendix i

Tasks and their associated program function.

The tune tasks were:

turn on communication radios,

turn on navigation radios,

tune TACAN to channel 114,

tune UHF to channel 6,

turn off UHF squelch,

tune VHF to 124.0,

put HF1 to maximum squelch,

turn on UHF1 squelch,

turn HF1 squelch off,

turn off communication radios then navigation radios.

The NAV tasks were:

put INS in NAV mode,

turn flight plan on,

go to page with outside air temperature,

go to airdrop page,

sequence flight mode between waypoint 3 and waypoint 4.

The PLAN tasks were:

check flight plan,

delete waypoint 9,

insert waypoint 9 after 6,

check flight history.

The TEST task was: go to the SCNS output test page.

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13. ABSTRACT *(Maximum 200 words)*

In modern commercial and military aircraft, the Flight Management System (FMS) lies at the heart of the functionality of the airplane. The nature of the FMS has also caused great difficulties learning and accessing this functionality. This study examines actual Air Force pilots who were qualified on the newly introduced advanced FMS and shows that the design of the system itself is a primary source of difficulty learning the system.

Twenty representative tasks were selected which the pilots could be expected to accomplish on an actual flight. These tasks were analyzed using the RAFIV stage model (Sherry, Polson, et al. 2002). This analysis demonstrates that a great burden is placed on remembering complex reformulation of the task to function mapping. 65% of the tasks required retaining one access steps in memory to accomplish the task, 20% required two memorized access steps, and 15% required zero memorized access steps. The probability that a participant would make an access error on the tasks was: two memorized access steps - 74%, one memorized access step - 13%, and zero memorized access steps - 6%. Other factors were analyzed as well, including experience with the system and frequency of use. This completed the picture of a system with many memorized steps causing difficulty with the new system, especially when trying to find where to access the correct function.

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